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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,485	12/05/2003	Karel Hajmrle	T8-467813US	2078

26912 7590 06/05/2009  
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EXAMINER
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LANG, AMY T

ART UNIT	PAPER NUMBER
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3731

MAIL DATE	DELIVERY MODE
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06/05/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/727,485	<b>Applicant(s)</b> HAJMRLE ET AL.	
	<b>Examiner</b> AMY T. LANG	<b>Art Unit</b> 3731	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-52 and 54-92 is/are pending in the application.
- 4a) Of the above claim(s) 1-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 27-52 and 54-92 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

The Non-Final rejection incorporated herewith replaces the Non-Final rejection mailed 11/13/2008 – because that Office Action was returned to the USPTO as undelivered.

#### ***Response to Amendment***

1. The Affidavit under 37 CFR 1.132 filed 07/23/2008 is sufficient to overcome the previous rejections of record.

#### ***Claim Objections***

2. **Claim 71** is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 71, which is dependent from claim 56 recites wherein the binder is sodium silicate. However, claim 56 recites this same limitation.

#### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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4. **Claims 27-43** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(i) claim 27 recites wherein the plurality of components is of the undersize particle fraction. However, it is the examiner's position that this is confusing and unclear. The declaration filed 07/23/2008 explains that a desired particle size fraction is one that will be used while the undersize particle fraction is one that is too fine to used in the solid lubricant. Furthermore, the instant specification teaches the undersize particle fraction is reprocessed in the recycle stream (see paragraphs [0016] and [0030]). Therefore, it unclear as to why the plurality of components, the undersize fraction, is reprocessed and recycled. It appears as though the desired particle size fraction in the instant disclosure is both the typical desired size and the undersize particle size.

(ii) claim 27 recites wherein the plurality of components comprises an undersize particle fraction. The term "components" refers to the solid lubricant, inorganic binder, and liquid before the granulation and drying step. Classifying the agglomerates by size is after the steps of granulation and drying. Therefore, it is unclear if the components are of the undersize particle fraction before the granulation and drying step or during the classifying step.

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5. **Claims 43 and 92** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 43 and 92 recite wherein the undersize particle fraction is supplied to the plurality of components after being classified. However, it is the examiner's position that this phrasing is confusing and unclear. Is the undersize particle fraction recycled and reprocessed and then mixed with the plurality of components? Or is the undersize particle fraction the desired particle size and mixed with the lubricant composition?

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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8. **Claims 27-29, 31, 38, 39, 41-45, 47, 54, 55, 72, 73, 76-78, 80, 87, 88, and 90-92** are rejected under 35 U.S.C. 103(a) as being unpatentable over Heath (US 3,051,586) in view of Sato et al. (US 4,233,254)

With regard to **claims 27, 29, 38, 39, 43, and 72**, Heath discloses a lubricant (see entire document) in the form of a coating or film applied by spraying (column 1, lines 10-13; column 3, lines 1-14). The lubricant is comprised of organic or inorganic binders and solid lubricants including graphite, molybdenum disulfide, boron nitride, and tungsten disulfide (column 1, lines 16-20; column 3, lines 18-33). The total amount of solid lubricant particles in the composition is disclosed as 80 parts by wt (Example 2, column 5). The total amount of resin binder is disclosed as 101.2 parts by wt (Example 2, column 5). Therefore the ratio of solid lubricant particles to binder is 0.79 ( $=80/101.2$ ), which clearly overlaps the instant range of 19:1 to 1:19. Since Heath discloses the use of either an organic or inorganic binder, and furthermore since the reference does not constrain the amount of inorganic binder to any particular value, it would have been obvious to use an inorganic binder in the same amount as the organic resin binder absent evidence to the contrary.

By adding 80 parts by wt of solid lubricant in a mixture comprised of a total of 1034.3 parts by wt, the amount of solid lubricant in the total mixture is 7.73% (Example 2, column 5). Therefore, the composition contains from 5 to 60 wt% solids.

Heath discloses the addition of other components to the composition including a wetting agent and zinc chromate powder, where either one would act as a filler

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(Example 2, column 5). These components are also added in amounts less than 40 volume% of the solids, which clearly overlaps the instant claims.

Heath discloses, in the method to produce the lubricant composition, the addition of water to the binder and solid lubricant mixture (column 3, lines 11-14). The mixture is then milled to a desired particle size cut.

However, Heath is silent as to the specific method to mill the mixture.

Sato et al. (hereinafter Sato) discloses a specific method to mill a solid lubricant and binder mixture (column 2, lines 45-67). Specifically, the mixture is granulated and then dried (column 3, lines 60-65). Next, the dried particles are classified by sieving in the usual manner wherein the agglomerates are classified by size into an undersize particle size, a desired particle size, and an oversize particle size fraction (column 4, lines 12-39). The undersize particle fraction is then granulated again to obtain the desired fraction (column 4, lines 23-28). Although Sato does not specifically disclose the plurality of particles as in the undersize fraction, it would have been obvious at the time of the invention to one of ordinary skill, as best understood. Sato discloses this method advantageously allows for 90% recovery of the starting mixture (column 5, lines 40-58). Therefore, it would have been obvious at the time of the invention for Heath to utilize the advantageous method disclosed by Sato to mill the mixture to the desired particle size cut.

With regard to **claim 28**, Sato further teaches wherein the oversize particle fraction is crushed to achieve the desired particle size cut (column 4, lines 35-39).

With regard to **claim 31**, Heath specifically discloses the solid lubricant as molybdenum disulphide and tungsten disulphide (column 3, lines 15-33).

With regard to **claims 41, 42, 44, 47, 54, and 55**, Sato teaches the mixture is dried at a variety of temperatures, specifically from 50 to 70 degrees Celsius (column 3, line 60 through column 4, line 10). It is the examiner's position that these temperatures are sufficient to render the binder non-dispersible. Additionally, Sato discloses the final mixture is heated to cure and harden the mixture (column 4, lines 59-65). This would also render the binder non-dispersible.

With regard to **claim 73**, Sato teaches the produced agglomerates are rounded in shape (column 5, lines 38-39).

With regard to **claims 76-78, 80, 87, 88, 90, 91, and 92**, Sato teaches the undersize particle fraction is recycled (column 4, lines 35-39).

9. **Claims 32, 33, 36, 48, 49, 52, 81, 82, and 85** are rejected under 35 U.S.C. 103(a) as being unpatentable over Heath (US 3,051,586) in view of Sato (US 4,233,254) as applied to claims 27 and 44 above, and further in view of Dorfman et al. (US 55,506,055).

Heath in view of Sato discloses a method of producing solid lubricant agglomerates wherein a solid lubricant, a binder, and a liquid are mixed. The solid lubricant is specifically disclosed as molybdenum disulfide, tungsten disulfide, or boron nitride and rendered non-dispersible by heating (column 3, lines 20-33 of Heath; column 3, line 60 through column 4, line 10 and column 4, lines 59-65 of Sato).



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However, neither Heath nor Sato discloses the solid lubricant as hexagonal boron nitride.

Dorfman et al. (hereinafter Dorfman) teaches that hexagonal boron nitride is the conventional form of boron nitride (column 3, lines 11-12). Since Heath discloses boron nitride as the solid lubricant and Dorfman teaches the conventional form is well known in the art, it would have been obvious to one of ordinary skill in the art at the time of the invention for Heath to utilize hexagonal boron nitride as the solid lubricant.

10. **Claims 27-31, 35-47, 54-63, 67-69, 70, 72-80, 87, 88, 89, and 90-92** are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al. (US 4,039,337) in view of Sato (US 4,233,254).

With regard to **claims, 27, 29-31, 38, 45, 46, 70, 72, 74, 75, and 79**, Brown et al. (hereinafter Brown) discloses a lubricating coating composition (see entire document) comprised of an aqueous mixture of solid lubricants including graphite, boron nitride, and tungsten disulfide and a silicate binder (column 2, lines 45-65). The amount of solid lubricant is disclosed from 5 to 70 wt%, while the binder is disclosed from 10 to 40 wt% (column 3, lines 16-19, 35-38). Therefore, the ratio of solid lubricant to binder clearly overlaps the instantly claimed range of 8:2. The total amount of solid lubricant in the composition is disclosed as 25.4 wt%, so that 5 to 60 wt% solids are present in the composition (Example 1, column 5).

Furthermore, Brown discloses additional components in the composition including thixotropic agents, which inherently act as fillers (column 4, lines 57-59).

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These fillers are in an amount less than 40 volume% of the solid lubricants (Example 1, column 5).

Brown teaches the composition as bound to a metal by a spraying process (Example III, column 6). The mixture is also milled to a desired particle size cut (column 5, lines 27-28).

However, Brown is silent as to the specific method to mill the mixture.

Sato et al. (hereinafter Sato) discloses a specific method to mill a solid lubricant and binder mixture (column 2, lines 45-67). Specifically, the mixture is granulated and then dried (column 3, lines 60-65). Next, the dried particles are classified by sieving in the usual manner wherein the agglomerates are classified by size into an undersize particle size, a desired particle size, and an oversize particle size fraction (column 4, lines 12-39). The undersize particle fraction is then granulated again to obtain the desired fraction (column 4, lines 23-28). Although Sato does not specifically disclose the plurality of particles as in the undersize fraction, it would have been obvious at the time of the invention to one of ordinary skill, as best understood. Sato discloses this method advantageously allows for 90% recovery of the starting mixture (column 5, lines 40-58). Therefore, it would have been obvious at the time of the invention for Brown to utilize the advantageous method disclosed by Sato to mill the mixture to the desired particle size cut.

With regard to **claim 28**, Sato further teaches wherein the oversize particle fraction is crushed to achieve the desired particle size cut (column 4, lines 35-39).

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With regard to **claims 41, 42, 44, 47, 54, and 55**, Sato teaches the mixture is dried at a variety of temperatures, specifically from 50 to 70 degrees Celsius (column 3, line 60 through column 4, line 10). It is the examiner's position that these temperatures are sufficient to render the binder non-dispersible. Additionally, Sato discloses the final mixture is heated to cure and harden the mixture (column 4, lines 59-65). This would also render the binder non-dispersible.

With regard to **claim 73**, Sato teaches the produced agglomerates are rounded in shape (column 5, lines 38-39).

With regard to **claims 76-78, 80, 87, 88, 90, 91, and 92**, Sato teaches the undersize particle fraction is recycled (column 4, lines 35-39).

With regard to **claims 40, 56, 71, and 89**, Brown specifically teaches the binder as sodium silicate (column 3, lines 25-27).

With regard to **claims 35, 37, 57-63, and 67-69**, Brown teaches the liquid in the mixture is water (column 3, line 46). Additionally, Brown further teaches the binder as silicates, such as sodium silicate, potassium silicate, or lithium silicate (column 3, lines 24-38). Although Brown does not teach the silicate as hydrous aluminum silicate, specifically bentonite, fuller's earth, or montmorillonite, such are obvious variants over the silicates disclosed by Brown and therefore would have been obvious at the time of the invention. Additionally, the instant disclosure describes these silicate binders as merely preferable and does not describe it as contributing any unexpected result to the invention. As such the binders are deemed a matter of design choice (lacking in any criticality) and well within the skill of the ordinary artisan, obtained through routine

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experimentation in determining optimum results. Additionally, it would have been obvious at the time of the invention for the silicates to be stabilized at a temperature above 850 degrees Celsius to properly function in the mixture, absent evidence to the contrary.

11. **Claims 32-34, 36, 48-51, 64-66, and 81-85** are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al. (US 4,039,337) in view of Sato (US 4,233,254) as applied to claims 27, 44, 57, and 76 and above, and further in view of Dorfman et al. (US 55,506,055).

Brown in view of Sato discloses a method of producing solid lubricant agglomerates wherein a solid lubricant, a binder, and a liquid are mixed. The solid lubricant is specifically disclosed as boron nitride and rendered non-dispersible by heating (column 2, lines 61-65 of Brown; column 3, line 60 through column 4, line 10 and column 4, lines 59-65 of Sato).

However, neither Brown nor Sato discloses the solid lubricant as hexagonal boron nitride.

Dorfman et al. (hereinafter Dorfman) teaches that hexagonal boron nitride is the conventional form of boron nitride (column 3, lines 11-12). Since Brown discloses boron nitride as the solid lubricant and Dorfman teaches the conventional form is well known in the art, it would have been obvious to one of ordinary skill in the art at the time of the invention for Brown to utilize hexagonal boron nitride as the solid lubricant.

***Response to Arguments***

12. Applicant's arguments with respect to claims 27-52 and 54-92 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMY T. LANG whose telephone number is (571)272-9057. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Todd Manahan can be reached on 571-272-4713. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

05/12/2009  
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